The Atom

Everything is made of **atoms**. Atoms are the smallest part of matter. Atoms are made up of 3 subatomic particles (particles smaller than the atom): **electrons, protons, and neutrons**.

**Atoms, Molecules, and Compounds**

Atoms combine into **molecules**. O is an atom; O₂ is a molecule: both are oxygen.

**Molecules are made up of two or more atoms.**

If two different atoms combine they make **compounds**: H₂O is a compound; O₂ is a molecule.

**Compounds are made up of two or more elements.**

John Dalton in 1808 published a theory of the atom that had these important points:

- All atoms of a particular element are the same.
- Atoms of different elements have different properties, mass, and chemical reactivity.
- Atoms are not changed by chemical reactions, just rearranged in order or number.

**Atoms, Molecules, and Compounds**

<table>
<thead>
<tr>
<th>Atom, molecule or compound?</th>
<th>What elements are these?</th>
</tr>
</thead>
<tbody>
<tr>
<td>NaCl — ________________</td>
<td>Na— ________________</td>
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<tr>
<td>Cl₂ — ________________</td>
<td>Cl— ________________</td>
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<tr>
<td>Na — ________________</td>
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</table>
1. Proton—
a. Particles with no charge that exists in the nucleus of most atoms.

2. Neutron—
b. Center of the atom, contains most of the atom's mass.

c. Positively charged particle in the nucleus of the atom. Determines the element.

d. The smallest part of an element or molecule. Building block of all things.

e. Negative particles in the nucleus of the atom.

f. Negatively charged particle that exists in the space around the nucleus.

3. Electron—

4. Nucleus—

5. Atom—

1. Atomic Number—
a. Total number of protons and neutrons in the nucleus of an atom.

b. Number of protons in an atom; also the way the elements are numbered.

c. An atom with a different number of neutrons.

d. Two or more elements combined.

e. Two or more atoms that are combined (can be same two atoms of same element).

f. Number of electrons in an atom.

2. Molecule—

3. Compound—

4. Mass Number—

5. Isotope—

Different number of neutrons—different isotope.
An isotope is a variety of an element with a different number of neutrons.

Begining to Read the Periodic Table

Reading the element individual tiles

Element Name

Silver

47

Ag

107.87

107, 109

Different number of protons—different element.

Atomic Number

(number of protons)

Chemical Symbol

Mass Numbers

(number of protons and neutrons in the nucleus of an isotope)

Atomic Mass

(units are a.m.u.)

How much mass would 2 atoms of silver have?

Find the chemical symbols for these elements:

Gold: ______________

Fluorine: ____________

Sulfur: ______________

Find the names for these elements:

Mg: ________________

N: ________________

He: ________________

Find the atomic numbers for these elements:

Oxygen: ____________

B: ________________

Lithium: ____________

Find the atomic mass for these elements:

H: ________________

Neon: ______________

Al: ________________

Use Your Periodic Table to Answer the Following

by C. Stephen Murray, 2003